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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/960,445	09/21/2001	Kais Gzara	19.0302	5790

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EXAMINER
HANNAHER, CONSTANTINE

ART UNIT	PAPER NUMBER
2878	

DATE MAILED: 06/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/960,445	GZARA ET AL.	
	Examiner	Art Unit	
	Constantine Hannaher	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 March 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) *5 and 6* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 7-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-23* are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 July 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☒ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *5* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

1. Claims 5 and 6 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 12.

Oath/Declaration

2. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

The full name of each inventor (family name and at least one given name together with any initial) has not been set forth.

The signature of inventor COOPER is suggestive of a middle initial ("M") which has not been set forth.

Drawings

3. The corrected or substitute drawings were received on July 30, 2002. These drawings are acceptable.

Specification

4. The disclosure is objected to because of the following informalities: at page 38, paragraph 00140, the symbol for cubic centimeter is cm^3.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 15-17, 22, and 23 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification does not describe determination of the average PEF of the *formation* as a ratio of values relating to the mud mixture.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-4 and 7-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holenka *et al.* (US005473158A) in view of Mathis (US005847384A).

With respect to independent claim 1, Holenka *et al.* discloses a method having all of the recited steps other than the final "comparing" step (see claim 1) applied to the determination of a characteristic of an earth formation rather than a mud mixture. Mathis teaches (column 7, lines 17-21) that an instrument **10** that can determine a characteristic of an earth formation can also be used to determine a characteristic of a mud mixture. In view of the analogous structures of energy source and sensors between the tools of Holenka *et al.* and Mathis, it would have been obvious that the method of Holenka *et al.* could determine a characteristic of a mud mixture surrounding a drilling tool within an inclined borehole in which a drilling tool is conveyed. The method of Holenka *et al.* already establishes at least two segments (and more, see claim 11), and it takes no more than ordinary skill in the art to understand that a mud mixture may be in any segment of the cross-section depending on the rugosity and angle of the inclined borehole. Accordingly, derivation using more than the bottom segment measurements Holenka *et al.* claims for the formation measurement would have been obvious to one of ordinary skill in the art at the time the invention was made. The comparison step would have been obvious to one of ordinary skill in the art to assess heterogeneity of the mud mixture characteristic, in analogy to the formation heterogeneity described by Holenka *et al.* at column 16, lines 21-43. Since a known indication of a characteristic of a mud mixture can be measured elsewhere as described by Mathis (column 7, lines 15-17) that comparison would have been obvious as a check on the validity of the derivation, or as a guide to assess changing conditions underground, and the like.

With respect to dependent claim 2, the number of segments is a choice within the ordinary skill in the art. Holenka *et al.* shows four segments (Fig. **6F**). It would have been obvious to one of ordinary skill in the art at the time the invention was made to derive the indication for as many segments as was considered useful depending on the desired performance.

With respect to dependent claim 3, Holenka *et al.* suggests deriving an indication for each segment in claim 2.

With respect to dependent claim 4, Holenka *et al.* suggests applying an detecting energy in the form of gamma rays in claim 3.

With respect to dependent claim 7, Holenka *et al.* suggests four segments having the recited names in claim 6.

With respect to dependent claim 8, Holenka *et al.* suggests the recited recording step in claim 7.

With respect to dependent claim 9, Holenka *et al.* suggests the recited recording steps in claim 8.

With respect to independent claim 10, Holenka *et al.* discloses a method having all of the recited steps other than the final "comparing" step (see claim 15) applied to the determination of the density of an earth formation rather than that of a mud mixture. Mathis teaches (column 7, lines 17-21) that an instrument **10** that can determine the density of an earth formation can also be used to determine the density of a mud mixture. In view of the analogous structures of energy source and sensors between the tools of Holenka *et al.* and Mathis, it would have been obvious that the method of Holenka *et al.* could determine the density of a mud mixture surrounding a drilling tool within an inclined borehole in which a drilling tool is conveyed. The method of Holenka *et al.* already establishes at least two segments (and more, see claim 18), and it takes no more than ordinary skill in the art to understand that a mud mixture may be in any segment of the cross-section depending on the rugosity and angle of the inclined borehole. Accordingly, derivation using more than the bottom angular distance measurements Holenka *et al.* claims for the formation measurement would have been obvious to one of ordinary skill in the art at the time the invention was made. The comparison

step would have been obvious to one of ordinary skill in the art to assess heterogeneity of the mud mixture density, in analogy to the formation heterogeneity described by Holenka *et al.* at column 16, lines 21-43. Since a known indication of the density of a mud mixture can be measured elsewhere as described by Mathis (column 7, lines 15-17) that comparison would have been obvious as a check on the validity of the determination, or as a guide to assess changing conditions underground, and the like.

With respect to dependent claims 11 and 12, Holenka *et al.* suggests defining other angular distances in claim 18.

With respect to dependent claim 13, Holenka *et al.* suggests the recording step in claim 19.

With respect to dependent claim 14, Holenka *et al.* suggests the use of count rates of hard windows in claim 20.

With respect to independent claim 15, to the extent understood (that is, replacing instance(s) of "formation" in the claim with "mud mixture") Holenka *et al.* discloses a method having all of the recited steps (see claim 27) applied to the determination of the photoelectric effect of earth formations rather than that of a mud mixture. Mathis teaches (column 7, lines 17-21) that an instrument **10** that can determine a characteristic of an earth formation can also be used to determine a characteristic of a mud mixture. In view of the analogous structures of energy source and sensors between the tools of Holenka *et al.* and Mathis, it would have been obvious that the method of Holenka *et al.* could determine the photoelectric effect of a mud mixture surrounding a drilling tool within an inclined borehole in which a drilling tool is conveyed.

With respect to dependent claim 16, Holenka *et al.* suggests the determining and applying steps in claim 28.

With respect to dependent claim 17, Holenka *et al.* suggests the determining steps in claim 29.

10. Claims 18, 20, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holenka *et al.* (US005473158A) and Mathis (US005847384A) as applied to claims 1 and 11 and 15 above, and further in view of Beasley *et al.* (US004495803A).

With respect to dependent claim 18, the problem of cuttings bed buildup is long-known in the art, as shown by Beasley *et al.* Since a cuttings bed occurs in the space of an inclined borehole with the mud mixture, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the measurement signals in the method of Holenka *et al.* applied to the mud mixture as suggested by Mathis were useful to the detection of cuttings bed buildup to the extent that cuttings had a value for the derived characteristic which was different from the value for the characteristic of the mud mixture. The tendency of substances to move to either the upper side of the lower side of the drill string based on density as described by Beasley *et al.* at column 1, lines 36-42 is sufficient for one skilled in the art to appreciate that different values do exist.

With respect to dependent claim 20, the problem of cuttings bed buildup is long-known in the art, as shown by Beasley *et al.* Since a cuttings bed occurs in the space of an inclined borehole with the mud mixture, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the measurement signals in the method of Holenka *et al.* applied to the mud mixture as suggested by Mathis were useful to the detection of cuttings bed buildup to the extent that cuttings had a density which was different from the density of the mud mixture. The tendency of substances to move to either the upper side of the lower side of the drill string based on density as described by Beasley *et al.* at column 1, lines 36-42 is sufficient for one skilled in the art to appreciate that such a density difference does exist.

With respect to dependent claim 22, the problem of cuttings bed buildup is long-known in the art, as shown by Beasley *et al.* Since a cuttings bed occurs in the space of an inclined borehole with the mud mixture, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the measurement signals in the method of Holenka *et al.* applied to the mud mixture as suggested by Mathis were useful to the detection of cuttings bed buildup to the extent that cuttings had a value for photoelectric effect which was different from the value for the photoelectric effect of the mud mixture. The tendency of substances to move to either the upper side of the lower side of the drill string based on density as described by Beasley *et al.* at column 1, lines 36-42 is sufficient for one skilled in the art to appreciate that different values do exist.

11. Claims 19, 21, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holenka *et al.* (US005473158A) and Mathis (US005847384A) as applied to claims 1 and 11 and 15 above, and further in view of Murphy *et al.* (US004492865A).

With respect to dependent claim 19, the problem of a kick is long-known in the art, as shown by Murphy *et al.* Since a kick occurs in the space of an inclined borehole with the mud mixture, and can be detected using an energy source and sensor analogous to those in the method of Holenka *et al.* as shown by the tool of Murphy *et al.*, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the measurement signals in the method of Holenka *et al.* applied to the mud mixture as suggested by Mathis were useful to the detection of a kick.

With respect to dependent claim 21, the problem of a kick is long-known in the art, as shown by Murphy *et al.* Since a kick occurs in the space of an inclined borehole with the mud mixture, and can be detected using an energy source and sensor analogous to those in the method of Holenka *et al.* as shown by the tool of Murphy *et al.*, it would have been obvious to one of ordinary

skill in the art at the time the invention was made that the measurement signals in the method of Holenka *et al.* applied to the mud mixture as suggested by Mathis were useful to the detection of a kick.

With respect to dependent claim 23, the problem of a kick is long-known in the art, as shown by Murphy *et al.* Since a kick occurs in the space of an inclined borehole with the mud mixture, and can be detected using an energy source and sensor analogous to those in the method of Holenka *et al.* as shown by the tool of Murphy *et al.*, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the measurement signals in the method of Holenka *et al.* applied to the mud mixture as suggested by Mathis were useful to the detection of a kick.

Response to Submission(s)

12. This application has been published as US2003/0057366A1 on March 27, 2003.

13. The amendment filed February 26, 2003 has not been entered as previously noted in Paper No. 11.

14. The papers filed on July 30, 2002 (certificate of mailing dated July 23, 2002) have not been made part of the permanent records of the United States Patent and Trademark Office (Office) for this application (37 CFR 1.52(a)) because of damage from the United States Postal Service irradiation process. The above-identified papers, however, were not so damaged as to preclude the USPTO from making a legible copy of such papers. Therefore, the Office has made a copy of these papers, substituted them for the originals in the file, and stamped that copy:

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If applicant wants to review the accuracy of the Office's copy of such papers, applicant may either inspect the application (37 CFR 1.14(d)) or may request a copy of the Office's records of such papers (*i.e.*, a copy of the copy made by the Office) from the Office of Public Records for the fee specified in 37 CFR 1.19(b)(4). Please do **not** call the Technology Center's Customer Service Center

to inquiry about the completeness or accuracy of Office's copy of the above-identified papers, as the Technology Center's Customer Service Center will **not** be able to provide this service.

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Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Constantine Hannaher whose telephone number is (703) 308-4850. The examiner can normally be reached on Monday-Friday with flexible hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (703) 308-4852. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

ch
May 30, 2003

Constantine Hannaher
Primary Examiner